

**EURYDEMA ORNATUM (L.) (HEM.: PENTATOMIDAE) ESTABLISHED ON
THE DORSET COAST AND A KEY TO EUROPEAN
EURYDEMA SPECIES**

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Abstract

Eurydema ornatum (Hemiptera: Pentatomidae), a species previously unknown from the British mainland other than as an accidental importation, is reported from Portland Bill, Dorset, in May 2005. In the light of this two earlier records are confirmed. It seems likely that this species is now established on the south coast of England. The status and identification of this and related species is discussed and a key to the species of this genus occurring in north-west Europe, which includes other potential future colonists of Britain, is provided.

The records

Situated between Bournemouth and Christchurch are the coastal undercliffs which extend between Southbourne in the east and Boscombe near Bournemouth. This area is notable in that it contains a remarkable assemblage of introduced and naturally established southern flora and fauna which thrives in the unusually warm and relatively dry micro-climate around the cliffs. The natural history of these cliffs came to prominence in recent years when Clouded Yellow butterfly *Coleus croceus* Geoff. was found to have a resident over-wintering population on the undercliffs (Skelton, 1999). The area has a distinctly Mediterranean feel with substantial colonies of the introduced Common Wall Lizard *Podarcis muralis* and also the beautiful Green Lizard *Lacerta bilineata* and a varied and exotic flora. On 25 April 2004, ARC was exploring the cliff tops around Gordon's Steps, Boscombe, South Hampshire (O. S. grid reference SZ 130913, VC 11) and noticed good numbers of the Brassica Bug *Eurydema oleracea*, of both white-spotted and red-spotted forms. These were associated with the abundant Sea Radish *Raphanus raphanistrum*, ssp *maritimus*, a crucifer with pale yellow flowers which is found all along the cliff tops (Fig. 1). While photographing *oleracea* two examples of a striking and unfamiliar red and black shieldbug were seen together on one Sea Radish plant. Several photographs were taken in the expectation of a rapid identification at home later. From the available literature (Hawkins, 2003; Chinnery, 1986) *Eurydema dominulus* was the only British species exhibiting a striking red ground colour with black markings. This is a rare woodland glade species recorded mainly from Kent and Sussex with a few old records from other southern counties. Searches for more examples of the bug during the summer and autumn of 2004 and early 2005 failed to produce any further sightings. A photograph and report of the record appeared in the Southampton Natural History Society (SNHS) annual report for 2004 under the name *Eurydema dominulus*.



Plate I. *Eurydema ornatum*, Boscombe, 7 June 2005.

Photo: A.R. Collins



Plate J. *Eurydema ornatum*, Portland Bill, May 2005.

Photo: D. Slade

In May 2005, whilst on holiday with his family, DS visited Tout Quarry, on the Isle of Portland, Dorset (SY 6872, VC 9). They were looking for Adonis Blue *Lysandra bellargus* (Rott.) and Early Gentian *Gentianella anglica*, when his fiancée Katherine Vint pointed out a spectacular black and red shieldbug crawling across a rock. DS photographed it *in situ* (despite the best efforts of a passing dog) and if it wasn't for the Slade family trait of wanting to film or photograph anything and everything it would probably have been left on the rock. However, DS's father, Brian, wanted to capture it on video, so it was taken back to the Bird Observatory. Almost as soon as he saw it, Martin Cade suggested that this could actually be something really exciting and that the specimen should be retained, in particular pointing to the section in Evans and Edmondson (2005) listing other shieldbug species that could occur in the UK.

E-mail correspondence between Martin Cade, Martin Evans, DS, Mike Wilson and Berend Aukema led to the suggestion that this was *Eurydema ornata* (*sic*), and that it was new to mainland Britain. Satisfied with the identification and the status of the insect in the UK, Martin published the photograph on the bird observatory web site in early June.

On seeing the photograph on the website, ARC recognised the close resemblance of the Portland and 2004 Boscombe specimens, and travelled to Portland to view the specimen. The identification of the 2004 bugs was discussed with Martin Cade at the observatory, and later with Martin Evans, DS and BSN by e-mail. *E. ornatum* was strongly suspected but there are a number of rather similar continental species that might occur in Britain.

ARC returned to the Boscombe area on 7 June 2005, accompanied by Rachel, his young daughter, but had with little expectation of finding any of the mystery *Eurydema* bugs, especially given unsuccessful searches by other members of the SNHS in the preceding month. Two hours of sweeping and searching on and around patches of Sea Radish revealed a number of *E. oleracea* but nothing else of note. However, close to the point of giving up, Rachel found one of the target bugs at the top of a Sea Radish plant! This was above Portman Ravine (SZ 120913, VC 11), about 1 mile west of the 2004 sightings. The bug was captured, and was later examined by BSN, giving particular attention to the colour and markings of the upperside of the abdomen. This is normally hidden beneath the forewings, but is a crucial diagnostic character. The bug was found to be a male *Eurydema ornatum*.

Genus *Eurydema*

The shieldbug genus *Eurydema* has about 20 European species (Stichel, 1955; Dolling, 1985) and, of these, eight are known from north-west Europe and might therefore arrive in Britain naturally, especially in a period of climate amelioration. In the past, two species have been accidentally imported on a number of occasions, these are *E. ornatum* and *E. ventrale* (Dolling *op.cit.*). Stichel gives keys to species, and species descriptions, in German; Dolling gives an English version of Stichel's keys and a separate key to four species which have reached or are resident in



Figure 1. Sea radish at Boscombe, June 2005.

Photo: A.R. Collins

mainland Britain. In addition, two species, *E. herbaceum* and *E. ornatum*, have been recorded from the Channel Isles (Le Quesne 1984); the former species was recorded in 1894 and 1897, but Le Quesne considered the record unverified, as he considered that it could have been *E. ornatum*.

The nomenclature of the European shieldbugs is in a state of flux pending publication of the final volume of the *Catalogue of Palaearctic Heteroptera* (Aukema & Rieger *in press*). Therefore, in the absence of definitive nomenclature the species names used in the present paper are those in current continental use, but may be modified in the near future.

A key to the eight species of *Eurydema* occurring in northwest Europe, and hence candidates for natural arrival in southern Britain, is given in the Appendix. This was compiled by BSN, based on the keys of Stichel and Dolling, referred to above.

Description and identification

The following comments are mainly based on the 7 June 2005 Boscombe specimen, a male, 8.1 mm in length (**Plate I**). The general impression is of a scarlet bug with black markings and black appendages. Our two 'native' species of *Eurydema* have, or may have, a red-and-black colour scheme superficially resembling that of the present bug and both have crucifers as host plants, typical for bugs of this genus.

Eurydema oleracea has a quite common red and black form but *E. oleracea* is typically several millimetres smaller than the present bug and is black with red markings, i.e. the inverse of the present bug which appears red with black markings. More particularly, the markings of the pronotum differ, *E. oleracea* has a pair of large 'rectangular' black marks (one each side of the midline), these occupy nearly half the area of the pronotum; the pronotum of the present bug has six much smaller black spots, two near the front margin and four in a transverse row behind the middle. Another difference is that the black tibiae of *E. oleracea*, normally have a central pale band, at least on the middle and hind legs, but this is absent in the present bug. These features in combination serve to distinguish the present bug from *E. oleracea*.

E. dominulus is a native red and black bug associated with Lady's Smock in damp woodland glades. It is typically slightly smaller even than *E. oleracea* but has six black spots on the pronotum as in the present bug. It also differs in that the exocorium (lateral region of forewing, demarcated from the rest of the forewing by a longitudinal 'fracture') is entirely red whereas the present bug has a distinctive large black spot about half way along the exocorium.

A critical diagnostic character of the continental species which might reach Britain is the coloration of the dorsum (upperside of abdomen). The Boscombe bug actually has a unicolorous black dorsum, visible in side view when the wings are flexed upwards slightly. This character narrows the possible identity of the present bug to three species; *E. herbaceum*, *E. oleracea* and *E. ornatum* (see Appendix). However the dark markings of the present bug are pure black, ruling out *E. herbaceum*, while *E. oleracea* has been ruled out above, hence it is concluded that the Boscombe bug is indeed *E. ornatum*. The Portland specimen (**Plate J**) is very similar and also has a black dorsum. Amongst some obvious small differences are the striking red bands on the legs. It is therefore reasonable to conclude that all the specimens seen in the field, or captured, on the south coast in spring 2004 and spring/summer 2005, are likely to have been the same species, *E. ornatum*.

Acknowledgements

The authors wish to thank Berend Aukema, Martin Cade, Martin Evans and Mike Wilson for their assistance and advice.

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APPENDIX

Key to shieldbug genus *Eurydema*, in north-west Europe

Based on Stichel (1955-1960) & Dolling (1985).

Note: Most *Eurydema* species are very variable in ground colour and the extent of dark markings.

Terminology

- connexivum = demarcated outer margin of abdomen
- corium = 'leathery' region of forewing
- dorsum = upperside of abdomen (excluding connexivum)
- exocorium = demarcated outer margin of forewing
- pronotum = visible upperside of thorax
- venter = underside of abdomen

- | | | |
|---|--|--------------------------------|
| 1 | Dorsum unicolorous black, or blackish violet-blue. | 7 |
| – | Dorsum largely red, some black marks may be present | 2 |
| | [View abdomen from the side, lift wing slightly if necessary.] | |
| 2 | Corium dark blue. [S of France, & Spain] | <i>cyaneum</i> (Fieber) |
| – | Corium otherwise | 3 |
| 3 | Exocorium entirely red, yellowish-red, or whitish | 4 |
| – | Exocorium in part black | 5 |
| 4 | Pronotum red with 6 black marks. L = 5.0-6.8mm [Finland to N Africa, E to China] | <i>dominulus</i> (Scopoli) |
| – | Pronotum red with 2 irregular black marks, exocorium whitish. L = 7.5-8.5mm [Germany, France, Morocco, E to Iran] | <i>fieberi</i> (Schummel) part |
| 5 | Exocorium red with a median black spot. L = 9.0-11.0mm [S of France, Morocco, E to India] | <i>ventrale</i> (Kolenati) |
| – | Exocorium yellow or red; distally at least in part black, middle may be broadly black | 6 |

- 6 Pronotum base and sides broadly red, exocorium whitish. L = 7.5-8.5mm.
 [Germany, France, Morocco, E to Iran] *fieberi* (Schummel) part
 – Pronotum base and sides narrowly red. L = 7.5-8.5mm
 [S of Germany, France, Portugal, E to Poland] *rotundicolle* Dohrn
- 7 Pronotum with 6 black marks, may be much reduced or enlarged & merge;
 or 2 large lobed black marks 8
 – Pronotum with 2 large rounded black marks (not lobed), may merge
 on midline. 9
- 8 Dark markings violet blue-black, generally more extensive than the
 red ground colour. Apical half of exocorium dark. L = 7.2-8.5mm
 [S of France, Iberia, Madeira] *herbaceum* (Herrich-Schaeffer)(part)
 – Dark markings pure black, generally less extensive than red ground
 colour. Exocorium with ±median black mark. L = 7-9mm. [S. of England,
 Sweden to Morocco, E to China] *ornatum* (L.)
- 9 Venter ground colour red; tibiae without broad pale band. L = 7.2-8.5mm.
 [S of France, Iberia, Madeira] *herbaceum* part
 – Venter ground colour not usually red; tibiae with broad pale band.
 (Ground colour of upperside varies from white to scarlet.) L = 5.5-7.5mm.
 [S of England, Finland to Morocco, E to Siberia] *oleracea* (L.)

Dasychira pudibunda L. (Lep.: Lymantriidae) melanism in north-west Kent

On 6 May my garden m.v. light attracted an unusual melanic of this species possessing a broad, well defined central blackish band on the forewings, leaving the basal and sub-basal, and sub-marginal areas the normal grey, and with some darkening of the thorax, body and hindwings – ab. *fasciata* Lempke. Chalmers-hunt 1962 (*The Moths and Butterflies of Kent*, Sup. Ent. Record 74) makes no mention of form, nor have I encountered it previously.

The extreme melanic ab. *concolor* Stdgr. is noted in this work as having been not recorded until 1948 in the county, stating that it appeared to be increasing in numbers, and gives a scattering of records. My garden m.v. light was operated first in 1969, and a specimen of ab. *concolor* appeared in 1971, though the next not until 1978. The presence of ab. *concolor* in Britain goes back to 1934 according to Kettlewell 1973 (*The Evolution of Melanism* 49) and has remained restricted to south-east England as far north as the Thames Valley, but not north of this, with